

EXHIBIT A

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REC'D CIV. SERVICE COMM
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SJC-12653

BOSTON POLICE DEPARTMENT vs. CIVIL SERVICE COMMISSION &
another.¹

Suffolk. April 1, 2019. - October 30, 2019.

Present: Gants, C.J., Lenk, Gaziano, Lowy, Budd, Cypher, &
Kafker, JJ.

Civil Service, Police, Appointment, Testing, Decision of Civil
Service Commission, Findings by commission, Judicial
review. Labor, Police, Civil service, Judicial review.
Municipal Corporations, Police. Police, Hiring. Public
Employment, Police. Administrative Law, Judicial review,
Substantial evidence. Practice, Civil, Review of
administrative action.

Civil action commenced in the Superior Court Department on
November 30, 2015.

The case was heard by Elizabeth M. Fahey, J., on a motion
for judgment on the pleadings.

The Supreme Judicial Court on its own initiative
transferred the case from the Appeals Court.

Michael F. Neuner for Michael Gannon.

Amy Spector, Assistant Attorney General, for Civil Service
Commission.

Helen G. Litsas for the plaintiff.

¹ Michael Gannon.

James S. Timmins, for Massachusetts Municipal Lawyers Association, amicus curiae, submitted a brief.

Lisa J. Pirozzolo, Arjun K. Jaikumar, Julia A. Harvey, Julia Prochazka, & Oren Sellstrom, for Massachusetts Association of Minority Law Enforcement Officers, amicus curiae, submitted a brief.

BUDD, J. The Boston police department (department) requires applicants for officer positions to be screened for drug use via a hair sample test. The department bypassed Michael Gannon for employment in 2013 because his hair sample tested positive for cocaine use in 2010. Gannon, who denied ever having used cocaine, appealed from the bypass to the Civil Service Commission (commission). After a hearing, the commission concluded that given the documented concerns regarding the reliability of the hair drug test generally, and the credible evidence from Gannon himself, the department had not demonstrated reasonable justification for the bypass. The department sought review of the commission's decision before a judge of the Superior Court, who overturned the decision and entered judgment for the department. Gannon and the commission appealed, and we transferred the case to this court on our own motion.

We note at the outset that the commission owes substantial deference to the department's decision making, particularly when it comes to hiring police officers. See Cambridge v. Civil Serv. Comm'n, 43 Mass. App. Ct. 300, 304-305 (1997). And we do

not question the appropriateness of the department's concern about a candidate's drug use. See O'Connor v. Police Comm'r of Boston, 408 Mass. 324, 328 (1990). But where a candidate challenges the department's decision to bypass him due to a positive drug test purportedly demonstrating that he recently had used cocaine and that he had exercised poor judgment by taking the test knowing he might fail it, the issue for the commission was not whether there was a substantial risk that the candidate had used illegal narcotics, but whether the department had demonstrated by a preponderance of the evidence that the candidate in fact had used illegal narcotics. After a full evidentiary hearing, the commission determined that the department had not met its burden.

Our task is to review the commission's decision to ensure that it is supported by substantial evidence and contains no error of law. G. L. c. 30A, § 14 (7). Upon review, we reverse the judge's order allowing the department's motion for judgment on the pleadings, and affirm the commission's decision.²

Background. We summarize the relevant facts found by the commission and supported by substantial evidence, supplemented with facts contained in the administrative record and consistent

² We acknowledge the amicus briefs submitted by the Massachusetts Municipal Lawyers Association and the Massachusetts Association of Minority Law Enforcement Officers.

with the commission's findings. We reserve some facts for later discussion of specific issues.

1. Gannon's applications to the department.³ Gannon initially became associated with the department in 2006 when he applied to become a department cadet, with the goal of becoming a Boston police officer. Gannon was a cadet from January 2007 until June 2009, when the cadet program was discontinued. As a cadet applicant, and later as a cadet, Gannon submitted hair samples for drug testing in 2006, 2007, and 2008; the results were negative on each occasion.

As part of Gannon's initial application to become a police officer with the department, he took and passed the civil service examination (examination) for police officer candidates in April 2009.⁴ He also submitted a hair sample for a

³ As discussed further infra, in addition to the instant appeal, Gannon commenced two additional appeals with the Civil Service Commission (commission), one before the instant appeal and one after. The first was withdrawn, and the other is pending.

⁴ Police officer candidates are subject to the State's civil service law, which, with some exceptions not applicable here, requires applicants to take and pass the civil service examination (examination) in order to be hired into positions in State agencies and municipalities. See G. L. c. 31, § 58. See generally Note, The Massachusetts Civil Service Law: Is It Necessary to Destroy the Current System in Order to Save It?, 40 New Eng. L. Rev. 1103, 1106 (2006). The examination, developed by the human resources division (division), varies depending upon the position sought. See G. L. c. 31, § 16. "The goal of the examination requirement is to ensure that employees are

preemployment hair drug test in March 2010, which tested positive for cocaine.⁵ At the hearing before the commission, Gannon testified that when he learned of the positive test result approximately one month later on April 20, 2010, he "was just completely shocked" and "couldn't believe it." He further testified that he had "never in [his] entire life used cocaine in any way, shape or form, whether it be shot, sniffed, smoked, never," that his friends do not take drugs, and that "there's no possible way" that he touched cocaine or snorted it even once. The day after Gannon learned of the test result, he provided a second hair sample for testing by the same laboratory. Although the result was not zero, it was below the level considered to be

appointed or promoted on the basis of their abilities, knowledge, and skills -- in other words, on the basis of merit -- and are not selected arbitrarily or for improper reasons, such as political or personal connections." Sherman v. Randolph, 472 Mass. 802, 804 (2015), citing G. L. c. 31, § 1.

⁵ Gannon's drug test result was 12.2 nanograms (ng) of cocaine per ten milligrams (mg) of hair, which exceeded the "cutoff" concentration level of five ng per ten mg set by the company to which the department outsources its drug testing, Psychomedics Corporation (Psychomedics). Gannon's results also indicated that his hair contained 0.8 ng of benzoylecgonine per ten mg of hair. Benzoylecgonine is the primary metabolite for cocaine. According to the report generated by Psychomedics, the presence of both the metabolite and cocaine above the cutoff level "establishes that the subject has ingested [c]ocaine."

"presumptively positive." He was not selected as an officer in 2010.⁶

Gannon took and passed the examination again in April 2011. In June 2012, the department sought to fill between approximately sixty and seventy police officer vacancies. The human resources division (division) of the Commonwealth provided the department with a certification list that included Gannon's name (certification no. 202869).⁷ In August 2012, Gannon submitted a hair sample to be screened for controlled substances; the result was negative.

In January 2013, the department sent Gannon a letter notifying him that he was "in a group of applicants who were all tied with the same score and [he was] one of the applicants not selected." Of those selected from certification no. 202869, one candidate was tied with Gannon on the list, two were ranked

⁶ When the department did not choose Gannon from a pool of eligible applicants, he appealed to the commission; however, he subsequently withdrew that appeal.

⁷ The division creates eligibility lists that rank candidates in order of their examination scores. G. L. c. 31, § 25. When the department has an open position, the division provides a "certification list" of eligible candidates from which the department is expected to fill the position. Although the department may bypass a higher-ranked candidate to choose another person on the list, it must have a reasonable justification for doing so. See G. L. c. 31, § 27. Candidates who have been bypassed may appeal from the decision to the commission. G. L. c. 31, § 2 (b).

below Gannon, and one candidate did not appear on the list at all. The notice did not mention a failed drug test or a bypass. However, at the hearing, the department's position was that Gannon was not appointed at that time because he had tested positive for cocaine in 2010. Gannon commenced the instant appeal with the commission, challenging the department's decision.⁸

2. The hair drug test. The department outsources the testing of hair samples for illegal narcotic use to Psychomedics Corporation (Psychomedics), a company that has licensed laboratories in approximately twenty-two States. The bulk of Psychomedics's work consists of testing hair samples for the presence of controlled substances such as cocaine, opiates, amphetamines, and marijuana.

a. The testing procedure. The department's expert, Dr. Thomas Cairns, the senior scientific advisor for Psychomedics at the time of the hearing,⁹ testified as to the proprietary procedure Psychomedics uses to test hair for illegal narcotics. The first step involves an initial screening or "presumptive

⁸ In August 2013, Gannon appealed from a third instance in which he was not selected for employment by the department. That appeal currently is pending.

⁹ Dr. Thomas Cairns also testified on behalf of the department in Matter of Boston Police Dep't Drug Testing Appeals, 26 Mass. Civ. Serv. Rep. 73 (2013) (Drug Testing Appeals), discussed infra.

test" of the hair sample by radioimmunoassay (RIA), which can detect the presence of controlled substances. If the RIA detects narcotics at or above the "cutoff" concentration level of five nanograms (ng) of cocaine per ten milligrams (mg) of hair, a confirmatory test is performed on a second part of the submitted sample.¹⁰

As part of the confirmatory test, the hair sample is subjected to five separate washes with a phosphate buffer solution in an attempt to remove any traces of narcotics in the sample from potential external or "environmental" contamination, as compared to narcotics that are ingested and present in the hair follicle. The liquid from the fifth wash is tested using RIA to determine whether external contaminants are present in the solution. According to Cairns, a fifth wash that tests negative for controlled substances means that any external contaminants initially present have been removed from the hair sample. Following the washing procedure, the hair sample is examined by way of liquid chromatography/mass spectrometry/mass

¹⁰ If the sample is below the cutoff concentration level, it is deemed presumptively negative for controlled substances. Although this does not mean that the RIA test was unable to detect any amount of controlled substance in the hair sample, the purpose of a cutoff level is to differentiate between a brief period of exposure to a particular controlled substance and a more prolonged exposure.

spectrometry (LC/MS/MS)¹¹ for the presence of controlled substances. If the result is above the cutoff level of five ng per ten mg, Psychemedics reports it as a "final positive confirmed," meaning it was positive for controlled substance(s).

Psychemedics sends positive LC/MS/MS test results to Concentra Health Services, Inc. (Concentra), an independent company, for review. Concentra assigns a medical review officer (MRO) who reviews the results and contacts the applicant to determine whether there is an explanation for the positive drug result (aside from ingesting a controlled substance). If the applicant fails to provide such an explanation, the MRO then issues a report notifying the department of the applicant's positive drug test result.

b. Reliability concerns regarding Psychemedics's hair drug test. As detailed infra, Gannon presented expert testimony and scientific studies calling into question whether Psychemedics's hair drug testing procedure could prove reliably that a subject had ingested cocaine rather than having been environmentally exposed to it. Questions center around RIA testing as well as the effectiveness of any washing procedure to remove external

¹¹ A liquid chromatography/mass spectrometry/mass spectrometry test is "a molecular fingerprinting technology which provides unambiguous identification of both the drug and its metabolites." However, as discussed infra, it does not identify the way in which the drug and its metabolites have been incorporated into the hair.

contaminants from hair samples in preparation for a confirmatory test.

First, RIA testing is prone to produce false positives. RIA testing involves incubating an antibody with the hair sample and radioactive material. The receptors of the antibody attract the radioactive material and the controlled substance for which the sample is being tested, e.g., cocaine. When analyzed, the antibody receptors that do not have radioactive material bonded to them are presumed to have bonded with the controlled substance that the antibody was designed to attract. However, the antibody used in RIA testing to detect cocaine also attracts substances that have similar chemical structures to cocaine, including local anesthetics used by dentists like lidocaine. Thus, there exists the potential for "cross reactivity," which gives rise to an RIA test reporting a false level of cocaine in the sample. This is why a confirmatory test must be performed using the more accurate LC/MS/MS test.

Second, it is unclear whether any washing procedure designed to remove external contaminants from a hair sample, including the washing procedure used by Psychemedics, can do so effectively. This is because external contaminants may become absorbed into the hair, and once absorbed, are resistant to removal. The ways in which substances, including controlled substances, can incorporate into the hair follicle vary and are

not fully understood. Stout, Ropero-Miller, Baylor, & Mitchell, External Contamination of Hair with Cocaine: Evaluation of External Cocaine Contamination and Development of Performance-Testing Materials, 30 J. Analytical Toxicology 490, 490 (2006) (Stout study). See generally Ropero-Miller & Stout, Analysis of Cocaine Analytes in Human Hair II: Evaluation of Different Hair Color and Ethnicity Types, Report to United States Department of Justice, Document No. 234628 (Mar. 31, 2010). In addition to ingestion, they include "blood exchange at the hair follicle; exposure to sweat and sebaceous secretions; transdermal diffusion of drug from the skin; and also . . . exposure to the external environment, including drug residues, contaminated surfaces, and vaporized drug."¹² Stout study, supra at 490-491.

Thus, even after a hair sample is "aggressively washed" and the liquid from the final wash tests negative for controlled substances, meaning that the external portion of the hair sample is no longer environmentally contaminated, a subsequent test of the hair sample using LC/MS/MS may not be a reliable measure of

¹² "Each of these mechanisms is affected by the chemical and physiological composition of the hair matrix." Stout, Ropero-Miller, Baylor, & Mitchell, External Contamination of Hair with Cocaine: Evaluation of External Cocaine Contamination and Development of Performance-Testing Materials, 30 J. Analytical Toxicology 490, 491 (2006) (Stout study).

whether the subject ingested drugs.¹³ That is, although the LC/MS/MS confirmatory test can identify the type of drug present in the hair sample, it cannot determine the way the drug became incorporated into the hair follicle.¹⁴

¹³ The Stout study found that thirty-eight percent of the 390 hair samples "decontaminated" by certain washing procedures, including the procedure employed by Psychemedics, still contained cocaine above the cutoff levels when using the benzoylecgonine criteria. Stout study, supra at 498. It also found that "the literature indicates that aggressive washing techniques can remove [cocaine] from hair [one hour] after it has been applied to the hair However, beyond an hour, one group reported wash procedures were unable to remove all of the [cocaine] in the hair up to [ten] weeks post-application." Id. at 491.

Although the dissent points to a "one hundred percent success rate" with respect to samples subjected to the Psychemedics protocols, this statistic must be viewed in context. Post at note 6. Of the 585 total hair samples examined, only ten underwent the additional criterion used by Psychemedics (i.e., the mathematical equation not at issue here). See Stout study, supra at 499. The more targeted Ropero-Miller study, which examined thirty-seven samples undergoing the full Psychemedics procedure (washing procedure and wash criterion) also failed to provide a clear, uncontroverted result in Psychemedics's favor. See Ropero-Miller & Stout, Analysis of Cocaine Analytes in Human Hair II: Evaluation of Different Hair Color and Ethnicity Types, Report to United States Department of Justice, Document No. 234628, at 1012-1013, 1016, 1094 (Mar. 31, 2010) (Ropero-Miller study). That study showed that the Psychemedics procedure managed to eliminate all false positives so long as the samples were tested shortly after contamination -- that is, because of the unstable nature of the metabolites, the success rate using the benzoylecgonine criteria fell to eighty-one percent over time (or seven false positives of the thirty-seven total samples). See id. at 1018, 1034, 1036, 1082, 1091.

¹⁴ The uncertainty surrounding environmental contamination is "further confounded by evidence that incorporation rates of

3. Procedural posture. The commission allowed Gannon's appeal, concluding that the hair drug test used was not sufficiently reliable to be the sole reason for the bypass and, thus, that the department failed to show by a preponderance of the evidence that its decision to bypass Gannon was reasonably justified. The division was ordered to place Gannon's name at the top of the then-current or future certifications for police officer positions within the department until he was selected or bypassed. The department commenced an action in the Superior Court, seeking judicial review of the commission's decision pursuant to G. L. c. 31, § 44, and moved for judgment on the pleadings, pursuant to Mass. R. Civ. P. 12 (c), 365 Mass. 754 (1974). A judge in the Superior Court allowed the department's motion and reversed the commission's decision. Gannon and the commission appealed to the Appeals Court, and we transferred the case to this court on our own motion.

drugs vary in hair with different melanin and protein content." Stout study, supra at 491, 498. For example, one study involving "in vitro surface contamination" with "cocaine and subsequent laboratory decontamination" on "hair of different color (e.g., light, dark) and ethnic origin (e.g., Caucasian, African American)" concluded that while decontamination methods employed resulted in fewer positive results, positive results were not entirely eliminated. Roper-Miller study, supra at ii-iv. "The possibility that differences in hair color may cause one individual to be more likely to test positive for a drug than another, despite both having ingested or having been exposed to the same amount of a drug, greatly concerns policymakers and forensic practitioners." Id. at ii.

Standard of review. When a candidate for an appointment appeals from a bypass pursuant to G. L. c. 31, § 2 (b), the commission's responsibility is to determine, "on the basis of the evidence before it, whether the appointing authority sustained its burden of proving, by a preponderance of the evidence, that there was reasonable justification for the [bypass]." Brackett v. Civil Serv. Comm'n, 447 Mass. 233, 241 (2006). Reasonable justification means "done upon adequate reasons sufficiently supported by credible evidence, when weighed by an unprejudiced mind, guided by common sense and by correct rules of law." Id., quoting Selectmen of Wakefield v. Judge of First Dist. Court of E. Middlesex, 262 Mass. 477, 482 (1928). It was the department's burden to establish such reasonable justification by a preponderance of the evidence. Brackett, supra. Although, as mentioned supra, the commission owes significant deference to the department's personnel decisions, especially with regard to hiring police officers, Cambridge, 43 Mass. App. Ct. at 304, the commission nevertheless is bound to reverse a bypass decision when the department fails to meet its burden of proof of demonstrating reasonable justification for the bypass by a preponderance of the evidence.

Like the Superior Court, we review the commission's decision under G. L. c. 31, § 44. Massachusetts Ass'n of Minority Law Enforcement Officers v. Abban, 434 Mass. 256, 263-

264 (2001) (Abban). The commission's decision will be upheld unless it is "unsupported by substantial evidence[,]. . . . arbitrary or capricious, an abuse of discretion, or otherwise not in accordance with the law." G. L. c. 30A, § 14 (7).¹⁵ Substantial evidence is "such evidence as a reasonable mind might accept as adequate to support a conclusion." G. L. c. 30A, § 1 (6). As we "give due weight to the experience, technical competence, and specialized knowledge of the agency, as well as to the discretionary authority conferred upon it," G. L. c. 30A, § 14 (7), the department bears a "heavy burden" of establishing that the commission's decision was incorrect. Abban, supra.

Discussion. The department contends that, in finding that the bypass was not reasonably justified, the commission made an error of law and failed to support its decision with substantial evidence. The dissent additionally takes issue with the commission's failure to defer to the department. We examine each point in turn.

1. Error of law. The department claims that the commission erred by relying on Matter of Boston Police Dep't Drug Testing Appeals, 26 Mass. Civ. Serv. Rep. 73 (2013) (Drug

¹⁵ We note that although the dissent acknowledges the correct standard of review, as discussed infra, it erroneously analyzes the commission's decision on a de novo basis.

Testing Appeals), a previous commission decision that reviewed the reliability of Psychemedics's hair drug testing as applied to tenured employees. As a result, the department argues, the commission required the department to meet a higher standard than necessary to justify the bypass, and failed to defer properly to the department's exercise of discretion.

In Drug Testing Appeals, a lengthy decision that included a comprehensive discussion of Psychemedics's drug testing procedure, the commission determined that the test was not sufficiently reliable alone to provide just cause for terminating a tenured department employee.¹⁶ Id. at 106, 107. The department contends that the commission erroneously found that the Drug Testing Appeals case controlled the result in this case because the standard for terminating a tenured employee, "just cause," is higher than the standard applied to bypass decisions, i.e., "reasonable justification." The department goes on to argue that because the commission concluded that, in

¹⁶ The commission in Drug Testing Appeals concluded that "[a] reported positive test result . . . is not necessarily conclusive of ingestion and, depending on the preponderance of evidence in a particular case, may or may not justify termination or other appropriate discipline of a tenured [department] officer." Thompson v. Civil Serv. Comm'n, 90 Mass. App. Ct. 462, 465 (2016). However, the commission also concluded that "hair testing is an appropriate tool to enforce the department's substance abuse policy and that hair test results could be used as some evidence of drug use" (emphasis added). Id. at 465-466.

the circumstances of this case, the hair drug test is not reason enough to bypass Gannon, the commission is holding the department to the "just cause" standard rather than the less rigorous "reasonable justification" standard.

This argument fails because the commission did not rely upon Drug Testing Appeals in its decision at issue here. Instead, the commission simply noted that the testimony presented at the hearing was "similar in substance to the supporting and opposing expert views offered in [Drug Testing Appeals]." The commission then went on to state that, "given the commonality of issues and evidence in the two cases, [the commission found] no reason to disturb the precedent established in [Drug Testing Appeals] regarding the reliability of hair drug tests" (emphasis added). Thus, contrary to the department's contention, the commission did not apply the "just cause" standard instead of the "reasonable justification" standard here. Rather, the commission merely pointed out that Psychomedics's hair drug test procedure was not sufficiently reliable on its own to meet either standard.¹⁷ We see nothing in

¹⁷ The department refers repeatedly in its brief to a "sole basis" test, which the department claims applies only to termination decisions, and which the commission erroneously extended to bypass decisions in this case. Of course, whenever the department proffers only one reason for either a termination or a bypass decision, the commission must evaluate that "sole basis" to determine whether it is sufficient for just cause in

the commission's decision indicating that it applied the "just cause" standard in this case.

2. Substantial evidence. In order to determine whether the commission's decision was supported by substantial evidence, we must begin by identifying the department's purported reason for bypassing Gannon. The commission found that the department's policy is to not "consider any candidates after they have tested positive for drugs of abuse," as Gannon had in 2010. According to hearing testimony from the department's director of human resources, this policy is a result of two considerations: (1) that the department is "looking for [officers] that don't have a history with drugs," and (2) that individuals who choose to go forward with a drug test when they know they might test positive for drugs demonstrate "poor judgment." Based on this policy, the department's reason for bypassing Gannon was that he had, in fact, used cocaine prior to his 2010 drug screen, and nevertheless decided to go forward with a hair test he should have known he might fail. For the reasons described infra, the commission concluded that the department had failed to demonstrate Gannon's prior drug use by a preponderance of the evidence. Implicitly, the commission

the former context, or reasonable justification in the latter. Thus, any so-called "sole basis" test would be employed in either situation. We therefore decline to adopt the department's nomenclature and reasoning in this regard.

likewise concluded that the department had failed to demonstrate Gannon's "poor judgment" by a preponderance of the evidence, as an individual who had not used drugs would have no reason to avoid submitting a hair sample for testing. We hold that this conclusion was supported by substantial evidence, that is, "such evidence as a reasonable mind might accept as adequate to support a conclusion." G. L. c. 30A, § 1 (6).

We begin with Gannon's hair drug test results. The hair sample collected in March 2010 was put through a presumptive test using RIA; the result was positive for cocaine. The sample was then subjected to LC/MS/MS confirmatory testing, prior to which it was washed pursuant to Psychemedics's washing procedure. The liquid from the fifth and final wash was tested using RIA and was found to be negative for controlled substances; that is, the external portion of the hair sample was cleansed of all environmental contaminants. The subsequent LC/MS/MS test showed that the sample contained 12.2 ng of cocaine per ten mg of hair, which is more than double the cutoff level of five ng per ten mg of hair set by Psychemedics. Accordingly, the sample was reported positive for cocaine. The second hair sample that Gannon provided approximately one month later, in April 2010, was subjected only to the presumptive test using RIA, as that sample tested just below the presumptive positive cutoff level of five ng per ten mg.

Because Gannon failed to provide an alternative explanation for the positive March 2010 test result, the department presumed that the test result reliably proved that Gannon had ingested cocaine. However, the commission had conflicting evidence before it that placed the hair drug test's reliability in question. On the one hand, the department presented expert testimony from a representative of Psychemedics that the test was reliable;¹⁸ on the other, Gannon presented expert testimony¹⁹ and scientific studies demonstrating that the reliability of the test has been credibly challenged in the scientific community.

In addition to the conflicting evidence regarding the reliability of the hair drug test generally, the commission had before it, and credited, Gannon's "ardent[], repeated[] and credibl[e]" statements denying that he had ever used cocaine.²⁰ The commission further noted evidence that corroborated Gannon's denials, which included the fact that he did not seek to explain

¹⁸ The commission noted that the department's expert from Psychemedics, Cairns, had "an added interest [in the outcome of the case] in that hair drug testing is how he earns an income and Psychemedics performed all five . . . of the hair drug tests [Gannon] has taken."

¹⁹ The commission noted that Gannon's expert, Dr. David Benjamin, "has the same interest as most expert professionals involved in litigation."

²⁰ Gannon's parents also testified that to their knowledge Gannon has never ingested cocaine. His mother testified that she was "shocked" when told about the positive drug test, and Gannon's father was convinced the test was wrong.

away the positive test as being a result of external contamination; instead, he testified that he could not think of how he ever would have come in contact with cocaine. The commission also considered the fact that Gannon sought to be retested as soon as he learned of the positive result, noting that someone who ingested cocaine multiple times per week likely would seek to delay a retest. Finally, the commission took note of Gannon's other hair drug tests on record, dating from 2006 to 2012, all of which were performed by Psychemedics, and all of which, except for the March 2010 test, were reported negative (i.e., below Psychemedics's set cutoff level) for illegal drug use.²¹

²¹ Separate and apart from reliability concerns about the test generally, the commission indicated that it had difficulty assessing the reliability of Gannon's test results specifically because the documentation was either irregular or lacking. With regard to the documents provided on the positive test result, the commission noted anomalies in the two nonidentical MRO test reports submitted as exhibits. The record provides no explanation for the existence of two nonidentical MRO reports for the same test result, but the director of the department's occupational health services unit (director) testified that the inconsistencies were of concern. Although both reports indicated that Gannon tested positive for cocaine, neither provided the actual test result numbers. Moreover, although one of the reports listed five ng per ten mg as the cutoff level for both the screen and confirmatory tests, the other left the confirmatory cutoff value blank. The director testified that if no value is provided for a drug under the "confirm" column, it is presumed that the hair sample was not subject to a confirmatory test and therefore did not exceed the cutoff level for that drug under the "screen" test. However, the director presented testimony that the missing "confirm" cutoff level on

In determining that the department did not demonstrate reasonable justification for Gannon's bypass, the commission weighed the evidence presented by the department that Gannon ingested cocaine against the evidence that Gannon provided that he did not.²² Given the credible concerns in the scientific community regarding the hair drug test, as well as Gannon's credible testimony, there was substantial evidence, i.e., that which "a reasonable mind might accept as adequate to support a conclusion," G. L. c. 30A, § 1 (6), for that determination.²³

one of the MRO reports "look[ed] to be an administrative problem."

Further, although there was a litigation package available to review for the positive drug test, there was a dearth of records for the drug tests that Gannon had passed. The department provided what appeared to be a complete set of records for the March 2010 positive test result, which included the summary of procedures, signed chain of custody records for each point in the process, screen data sheets signed by Psychomedics personnel, and graphs of the test results. In contrast, there was no more than a one-page test result for 2006 and 2007, and for 2008 and 2012 the department provided the one-page test results and unsigned screen data sheets. Although the department reported that the lack of records was due to the Psychomedics record retention schedule, as the commission pointed out, that policy does not account for the failure to provide a complete package for the 2012 test. The commission specifically found that "[n]ot having the same information for each test precludes further assessment of the hair drug test's reliability."

²² We note that although Gannon presented evidence at the hearing, the department had the burden of proof.

²³ We emphasize that it is our duty to determine only whether substantial evidence existed for the commission's

3. Deference. The dissent takes issue with the fact that the commission failed to defer to the department's hiring decision, contending that the commission instead substituted its own standard of risk of drug use by police officer candidates for that of the department. Post at . In doing so, the dissent strays from our long-standing administrative law jurisprudence, committing two major errors. First, rather than simply making a determination whether the commission's decision was supported by substantial evidence, the dissent instead weighs the evidence itself, engages in its own fact finding, and substitutes its own judgment for that of the commission. Second, by relying on Beverly v. Civil Serv. Comm'n, 78 Mass. App. Ct. 182, 188 (2010), the dissent erroneously suggests that when facts are in dispute regarding a candidate's conduct, the department need only provide a "sufficient quantum of evidence to substantiate its legitimate concerns" regarding that candidate to justify a bypass decision rather than providing reasonable justification by a preponderance of the evidence as required by G. L. c. 31, § 2 (b).

decision, not to determine whether we would have reached a different conclusion. See Labor Relations Comm'n v. University Hosp., Inc., 359 Mass. 516, 521 (1971). Indeed, given the conflicting evidence on both sides, had the commission concluded that the test was reliable enough by itself to be the sole grounds for the bypass in this case, there likely would have been substantial evidence for that decision as well.

To begin, the dissent errs by viewing the case through the lens of the commission rather than that of a reviewing court. In concluding that the commission improperly weighed the evidence presented to it, post at , rather than leaving the commission to its task of making credibility determinations and factual findings, the dissent makes its own.²⁴ See School Comm. of Brockton v. Massachusetts Comm'n Against Discrimination, 423 Mass. 7, 15 (1996) ("The commission, and not the court, is the sole judge of the credibility and weight of the evidence before it").

In finding that the commission came to the wrong conclusion regarding the Psychomedics hair drug test, the dissent relies

²⁴ Ironically, the dissent contends that the commission erred by substituting its judgment for that of the department. Post at . We disagree. The commission was tasked with determining whether "the department's action comports with '[b]asic merit principles.'" Police Dep't of Boston v. Kavaleski, 463 Mass. 680, 688 (2012), quoting G. L. c. 31, § 1. That is, the commission's role was to determine whether the department had proved reasonable justification for the bypass by a preponderance of the evidence. On that front no deference is owed to the department. See Zachs v. Department of Pub. Utils., 406 Mass. 217, 224 (1989) ("The weight of the evidence is for the [agency] to decide"). Had the commission found Psychomedics's hair drug test to be sufficiently reliable to prove that Gannon had ingested cocaine, but nevertheless overturned the bypass, we would reverse the decision as an improper substitution of the commission's judgment for that of the department. See Cambridge v. Civil Serv. Comm'n, 43 Mass. App. Ct. 300, 305 (1997) (commission substituted its judgment for that of city where it weighed undisputed evidence and reached different employment decision).

principally upon the fact that the result of the confirmatory LC/MS/MS test of the sample was more than twice Psychemedics's positive cutoff level, contending that this result, together with Gannon's failure to provide an explanation for it, is sufficient proof of Gannon's ingestion of cocaine to justify the bypass.²⁵ The dissent makes much of the fact that the liquid from the fifth wash of Gannon's March 2010 hair sample was negative, which presumably means that any external contaminants had been removed from the outside of the sample. However, the dissent ignores the evidence that the commission had before it, including testimony from Cairns, the expert from Psychemedics, that external contaminants can seep into the hair follicle, which, as the other evidence presented pointed out, see Stout study, supra at 499, makes such contaminants resistant to removal by any existing washing procedure employed.²⁶

²⁵ As noted supra, it is the department that shoulders the burden of proof at the hearing before the commission. The fact that Gannon did not provide an explanation for what the commission concluded was an insufficiently reliable positive drug test result does not imbue the test with reliability or otherwise provide credible evidence of Gannon's drug use.

²⁶ The dissent suggests that the studies presented to the commission do not show that Psychemedics's hair drug testing procedure is unreliable because the studies relied on "hair samples that had been directly contaminated by extremely large amounts of cocaine relative to the amounts used in the Psychemedics testing." Post at . However, we are not aware of any studies provided to the commission that correlate the amount of cocaine applied to hair samples with the amount of or

The dissent also finds significant that, according to Cairns, the result of Gannon's April 2010 retest, which was just under the cutoff level for a presumptively positive test result, was consistent with Gannon having used cocaine twenty-five days earlier, thus bolstering the reliability of the positive March 2010 test.²⁷ This position fails to account for the evidence presented that RIA testing often produces false positives due to "cross reactivity." Thus, an RIA test that presumably has detected cocaine in a preliminary test of a hair sample may have detected a different substance with a similar chemical structure instead. In short, although the test result could be seen as consistent with cocaine use, the opposite view is also reasonable.

The dissent contends that the commission's conclusion was "based on overwhelmingly improbable inferences." Post at . In doing so, the dissent discounts any of the evidence in the record that conflicts with its view of the facts.²⁸ For example,

rate at which the cocaine is incorporated into the hair follicle.

²⁷ The dissent characterizes this portion of Cairns's testimony as uncontradicted, post at ; however, as explained supra, there is no dispute that RIA is known to produce false positives. This information, as well as Gannon's testimony that he had not ingested cocaine, are two pieces of evidence that clearly contradict Cairns on this point.

²⁸ The dissent also references facts and studies that were not before the commission when it made its decision in the

because Gannon's denials of cocaine use contradict the positive results of the hair drug test, the dissent does not credit them at all, even though the fact finder, i.e., the commission, found Gannon's testimony to be credible. See School Comm. of Brockton, 423 Mass. at 15. Even if this court would have come to a different conclusion on the evidence presented on a de novo review, fact finding is the role of the commission and not the reviewing court. See Labor Relations Comm'n v. University Hosp., Inc., 359 Mass. 516, 521 (1971) ("A court may not displace an administrative board's choice between two fairly conflicting views, even though the court would justifiably have made a different choice had the matter been before it de novo"). Our limited task is to determine whether there was substantial evidence for the decision that the commission actually made, not the one that the dissent thinks the commission should have made.

As discussed in detail supra, there was substantial evidence in the record documenting the concerns raised in the

instant case, including information regarding the current use of the test by the Federal Bureau of Investigation. Post at note 12. Information outside the administrative record cannot be considered in our review of the commission's decision. See G. L. c. 30A, § 11 (4) ("All evidence, including any records, investigation reports, and documents in the possession of the agency of which it desires to avail itself as evidence in making a decision, shall be offered and made a part of the record in the proceeding, and no other factual information or evidence shall be considered . . .").

scientific community regarding the reliability of the test and the effectiveness of the washing procedure to remove external contaminants, and the questions about the ways in which controlled substances can incorporate into a hair follicle. These concerns, combined with the other evidence presented, provided "such evidence as a reasonable mind might accept as adequate to support a conclusion."²⁹ G. L. c. 30A, § 1 (6).

Finally, the dissent claims that an appointing authority can demonstrate reasonable justification by presenting a "sufficient quantum of evidence" to substantiate its "legitimate concerns" about the risk of an applicant's misconduct. Post at , , quoting Beverly, 78 Mass. App. Ct. at 188. We agree that a police department should have the discretion to determine whether it is willing to risk hiring an applicant who has engaged in prior misconduct (including one who has done so and subsequently lied about it). However, where, as here, the alleged misconduct is disputed, an appointing authority is entitled to such discretion only if it demonstrates that the

²⁹ The dissent presumes that we have adopted the commission's conclusion with regard to the reliability of Psychemedics's hair drug test. See, e.g., post at , , , , . In fact, we take no position on the test's degree of accuracy in detecting cocaine ingestion. Rather, we review the record only to determine whether the commission's conclusion is supported by substantial evidence and is not otherwise arbitrary, capricious, or an error of law, "giv[ing] due weight to [the commission's] experience and knowledge." Malloch v. Hanover, 472 Mass. 783, 795-796 (2015).

misconduct occurred by a preponderance of the evidence. See Cambridge, 43 Mass. App. Ct. at 305; G. L. c. 31, § 2 (b).

In Cambridge, supra at 305, the Appeals Court held that where an applicant has engaged in past misconduct, it is for the appointing authority, not the commission, to determine whether the appointing authority is willing to risk hiring the applicant. However, the misconduct in Cambridge was undisputed by the applicant. Here, in contrast, the question whether Gannon engaged in past misconduct was the single issue brought before the commission. Because the failed drug test was the department's proof that Gannon ingested cocaine and was the sole reason for the bypass, it was the department's burden to prove by a preponderance of the evidence that the test reliably demonstrated that Gannon had ingested cocaine. To the extent that the dissent suggests that there are occasions when an appointing authority need not demonstrate reasonable justification by a preponderance of the evidence as required by G. L. c. 31, § 2 (b), we disagree.

In Beverly, 78 Mass. App. Ct. at 190, the Appeals Court concluded that the commission erred as a matter of law when it required the city to prove that the candidate committed the misconduct for which he was fired from a previous job. In so doing, the Appeals Court articulated a different standard of proof to be applied in cases where an applicant's misconduct is

in dispute, i.e., an appointing authority need only demonstrate "a sufficient quantum of evidence to substantiate its legitimate concerns." Id. at 188. See G. L. c. 31, § 2 (b).³⁰ It is error to apply any standard other than a preponderance of the evidence in this context. See Anthony's Pier Four, Inc. v. HBC Assocs., 411 Mass. 451, 465 (1991), quoting Commonwealth v. Hawkesworth, 405 Mass. 664, 669 n.5 (1989) ("an appellate court 'carefully scrutinizes the record, but does not change the standard of review'").

Citing to Cambridge, 43 Mass. App. Ct. at 305, the court in Beverly, 78 Mass. App. Ct. at 190, further suggested that to require an appointing authority to prove a candidate's alleged misconduct "would force the city to bear undue risks." However, the "risk" discussed in Cambridge pertained to risk that the candidate might engage in future misconduct, not risk that the candidate engaged in past misconduct.

For these reasons, the department may not rely on demonstrating a "sufficient quantum of evidence" to substantiate its "legitimate concerns" about the risk of a candidate's misconduct. Beverly, 78 Mass. App. Ct. at 188. Instead, it

³⁰ We express no opinion as to whether, given the facts in Beverly v. Civil Serv. Comm'n, 78 Mass. App. Ct. 182 (2010), the city could have proved by a preponderance of the evidence that it had reasonable justification for bypassing the applicant in that case.

must, as required by G. L. c. 31, § 2 (b), demonstrate reasonable justification for the bypass by a preponderance of the evidence.

Conclusion. This case is not about whether drug use provides reasonable justification for the department to bypass an applicant for a position as a police officer. The commission made a determination that, by itself, the Psychemedics hair drug test was not enough to sustain the department's burden of proving by a preponderance of the evidence that Gannon ingested cocaine. Having fully examined the administrative record, and having taken into account both the supporting evidence as well as that which "fairly detracts from the supporting evidence's weight," Cobble v. Commissioner of the Dep't of Social Servs., 430 Mass. 385, 390 (1999), we conclude that the commission's determination was supported by substantial evidence. We further conclude that the commission employed the correct standard and that its decision contains no error of law. We therefore decline to disturb it.

The Superior Court's order allowing the department's motion for judgment on the pleadings is reversed, and the case is remanded to the Superior Court for entry of an order affirming the commission's decision.

So ordered.

KAFKER, J. (dissenting). Scientific testing unequivocally established that Michael Gannon had 12.2 nanograms (ng) of cocaine in his hair, an amount more than double the number necessary for a positive drug test result and the equivalent, according to uncontradicted testimony by the Boston police department's (department's) expert, of doing a line of cocaine for ten weekends in a row. Thus, the only issue in Gannon's appeal from his bypass to the Civil Service Commission (commission) was whether he ingested this amount of cocaine or whether, without his knowledge, the cocaine somehow got into his hair externally through environmental contamination.

The scientific evidence and expert testimony is not, as the court concludes, "fairly conflicting" on the issue of ingestion versus environmental contamination. Ante at , quoting Labor Relations Comm'n v. University Hosp., Inc., 359 Mass. 516, 521 (1971). There was no scientific evidence whatsoever in the studies or elsewhere in the record plausibly supporting Gannon's alibi that his hair somehow had been externally contaminated with such a large amount of cocaine without his knowing it. By contrast, there was substantial scientific evidence ignored or downplayed by the commission and the court establishing ingestion, including, but not limited to, the magnitude of the 12.2 ng test result and the absolute zero reading for the decontamination wash of Gannon's positive hair sample,

indicating an absence of external contamination. A close reading of the scientific studies and the testimony of Gannon's expert also reveals that the concerns raised about the unreliability of hair drug testing relied on by the commission and apparently adopted by the court did not apply to the decontamination methods or cutoff criteria used by the Psychomedics Corporation (Psychomedics) testing laboratory in the instant case. In fact, the studies established the high degree of reliability of the testing procedures at issue. In sum, there was substantial evidence of ingestion in the instant case.

Deference is also due to the department's determination of the standards for a tolerable risk of hiring a police officer candidate who may have engaged in illegal drug use and lying, as compliance with the law and honesty are among the most essential characteristics of a police officer. The department need not assume an "undue risk[]" of hiring a police officer candidate who has taken illegal drugs and lied about it. See Beverly v. Civil Serv. Comm'n, 78 Mass. App. Ct. 182, 190 (2010). In particular, the department was entitled to rely on a test (such as the one used here) that reasonably and reliably identified a high probability of illegal drug use by a police officer candidate and hence created an undue risk of hiring that candidate. Even if that test was not flawless, neither the

commission nor this court is a super personnel agency for the Commonwealth entitled to substitute its own standards of risk of hiring a police officer candidate who has engaged in drug use, and its own testing protocols. Yet that is exactly what the court and the commission have done here. In so doing, they place an undue risk of an officer candidate's drug use and lying on the department and the public that the department serves. For all these reasons, I respectfully dissent.

1. Discussion. a. Deference to appointing authority. An appointing authority bears the burden of proving by a preponderance of the evidence that it had a "reasonable justification" for a hiring bypass decision that is consistent with "[b]asic merit principles." Police Dep't of Boston v. Kavaleski, 463 Mass. 680, 688 (2012), quoting G. L. c. 31, § 1. In determining whether the justifications that an authority offers for a bypass are reasonable, the commission must "properly weigh[] those justifications against the fundamental purpose of the civil service system, . . . [which is] to ensure decision-making in accordance with basic merit principles." Massachusetts Ass'n of Minority Law Enforcement Officers v. Abban, 434 Mass. 256, 264 (2001) (MAMLEO). Those purposes are to "guard against political considerations, favoritism, and bias"; the commission is not, however, to "substitute its judgment about a valid exercise of discretion based on merit or

policy considerations by an appointing authority." Cambridge v. Civil Serv. Comm'n, 43 Mass. App. Ct. 300, 304 (1997). Rather, in these cases, "the commission owes substantial deference to the appointing authority's exercise of judgment in determining whether there was 'reasonable justification.'" Sherman v. Randolph, 472 Mass. 802, 810 (2015), quoting Beverly, 78 Mass. App. Ct. at 188. This exercise of "deference is especially appropriate with respect to the hiring of police officers." Sherman, supra, quoting Beverly, supra.

The department is understandably greatly concerned about illegal drug use and lying by police officers. See Boston v. Boston Police Patrolmen's Ass'n, 443 Mass. 813, 823 (2005) ("strong . . . public policy . . . that police officers be truthful and obey the law in the performance of their official duties"); O'Connor v. Police Comm'r of Boston, 408 Mass. 324, 328 (1990) ("drug use by police officers" is "inimical to public safety" and "cannot be reconciled with respect for the law"). See also Falmouth v. Civil Serv. Comm'n, 61 Mass. App. Ct. 796, 802-803 (2004) (upholding appointing authority's suspension of police officer for violating "important standards of conduct" by being untruthful). The department cannot perform its law enforcement mission if police officers disobey the law or lie. The department is therefore entitled to protect itself and the public against such risks. It may therefore set reasonable

standards of tolerable risk of illegal drug use and lying by its police officer candidates. It certainly need not accept a high risk of drug use by a police officer candidate. See Beverly, 78 Mass. App. Ct. at 190. Great deference is also due to those decisions, given the grave consequences of hiring law enforcement officers who defy the law and lie. See Sherman, 472 Mass. at 810, quoting Beverly, supra at 188.

At issue in the instant case is the policy the department has adopted to identify, and protect against, such risks. The department has a policy that it will not hire an officer candidate who reports positive for drug use after failing a preemployment drug test and not providing any alternative explanation to a medical review officer.¹ There are no allegations in this case that this policy has "overtones of

¹ The department sent Gannon a letter in February 2014 stating that it had bypassed him in 2013 for two "reasons": (1) the Psychedics test result of March 2010 that "indicate[d] [Gannon] tested positive for the use of cocaine"; and (2) "confirm[ation]" of the test result by Gannon's inability to provide an alternate explanation to the medical review officer for the positive test result. Although Gannon's appeal from his 2013 bypass is still pending before the commission, the commission and the parties proceeded on the basis that his 2012 bypass also "was based on his March 27, 2010 positive hair drug test result." The court ignores the second reason for Gannon's bypass and does not explain why a candidate's inability to explain a negative drug test result is not the sort of "information" on which an appointing authority may rely. Sherman v. Randolph, 472 Mass. 802, 813 n.18 (2015) ("An appointing authority may use any information it has obtained through an independent, impartial, and reasonably thorough review as the basis of its decision to bypass a candidate").

political control" or implicates "objectives unrelated to merit standards or neutrally applied public policy." Cambridge, 43 Mass. App. Ct at 304. The only question is whether failure of such test provides a reasonable justification for bypassing the selection of a police officer candidate because it provides a "sufficient quantum of evidence" to support the police department's "legitimate concerns" about drug use and lying by a police officer candidate. Beverly, 78 Mass. App. Ct. at 188.

Several police officer cases are instructive in analyzing this question. In Beverly, 78 Mass. App. Ct. at 184-186, a police department bypassed a reserve police officer candidate after concluding that the candidate had improperly accessed voicemail accounts at his previous job (from which, consequently, he had been fired). The department conducted an investigation that considered interviews with the candidate, surveillance photographs from the previous employer, and a report from an information technology specialist analyzing data related to the employer's voicemail accounts. Id. The commission overturned the bypass because it found that the department's evidence was "inconclusive" and that the candidate's denial of accessing the voicemails was "credible." Id. at 191-192. The Appeals Court reversed: it held that the commission erred when it focused on "whether the city had proved that [the candidate] in fact engaged in the misconduct." Id. at

190. Rather, it concluded that, so long as the appointing authority "conducted an impartial and reasonably thorough review that confirmed that there appeared to be a credible basis for the allegations," the existence of a "factual contest over whether [the candidate had] ever engaged in the misconduct" did not deprive the authority of reasonable justification for its bypass. Id. at 188-189.² A reasonable justification for the bypass included an "undue risk[]" that the misconduct had occurred. Id. at 190.

The process and substantive standards for bypassing a police officer candidate were also considered in Kavaleski, 463 Mass. at 695. There, we found that the police department lacked reasonable justification for the bypass. The particular issue in Kavaleski was whether the department had sufficient evidence to bypass a police officer candidate on the basis of a report from an examining psychiatrist. Id. at 682-684. We explained

² Although this court has cited Beverly v. Civil Serv. Comm'n, 78 Mass. App. Ct. 182 (2010), with approval, see Sherman, 472 Mass. at 813 n.18, and I believe its reasoning is sound, the court today decides that the dissent "erroneously suggests that when facts are in dispute regarding a candidate's conduct" a high risk of misconduct is not enough; rather, the misconduct must be proved. Ante at . If the court is overruling Beverly, and holding that a police department must assume a high risk of drug use and lying by its police officer candidates, it should say so expressly. Regardless, here, there was substantial evidence that Gannon repeatedly ingested cocaine and lied about it, and a lack of substantial evidence for external contamination.

that, although it is certainly legitimate for the department to bypass a candidate determined to have certain psychological conditions, id. at 695 n.23, the psychiatrist in this case had made "substantially subjective determinations" that were "insufficiently factually supported" and lacked any apparent connection to the duties of a police officer (for example, the observation that the candidate had "messy hair"), id. at 693, 695. The commission legitimately found these determinations indicative of "some bias or some other improper consideration." Id. at 693. We affirmed the commission's decision that the bypass was invalid.

A third informative case involving a police officer position is Sherman, 472 Mass. at 803. There, we upheld a bypass decision where the appointing authority had used a somewhat subjective and hence "flawed" interviewing process, but a review of the entire administrative record revealed that there was no indication that the bypass was motivated by reasons incompatible with basic merit principles. Id.

In the instant case, the commission and the court depart from the reasoning of these cases. The department here has a compelling justification not to tolerate a high risk of illegal drug use by police officer candidates. As explained in detail infra, it also has developed a reasonable and reliable means of identifying a high risk of drug use by a police officer

candidate. The application of the test, and the bypassing of police officer candidates that fail the test, is also fully consistent with merit principles. There is nothing about it to suggest improper considerations. In these circumstances, the department has a reasonable justification for the bypass. When the entire record is examined, it is also clear that the department has proved by a preponderance of evidence its reasonable justification for the bypass, thereby satisfying the substantial evidence test.

b. Substantial evidence. i. Standard of review. As the court correctly acknowledges, ante at , substantial evidence review requires us to "examine[] the entire administrative record and take[] into account whatever in the record would fairly detract from the supporting evidence's weight" (citation omitted). MAMLEO, 434 Mass. at 265. Accord Andrews v. Civil Serv. Comm'n, 446 Mass. 611, 616 (2006); Cobble v. Commissioner of the Dep't of Social Servs., 430 Mass. 385, 390 (1999), citing New Boston Garden Corp. v. Assessors of Boston, 383 Mass. 456, 466 (1981). "We have frequently stated that substantial evidence is such evidence as a reasonable mind might accept as adequate to support a conclusion. . . . A finding of the [commission] must[, however,] be set aside if the evidence points to no felt or appreciable probability of the conclusion or points to an overwhelming probability of the contrary."

(Quotations and citations omitted.) New Boston Garden Corp., supra. As the court fails to recognize, "we are not required to affirm the [commission] merely on a finding that the record contains evidence from which a rational mind might draw the desired inference." Id. Rather, a commission decision requires "reversal by a reviewing court . . . 'if the cumulative weight of the evidence tends substantially toward opposite inferences.'" Mendonca v. Civil Serv. Comm'n, 86 Mass. App. Ct. 757, 766 (2014), quoting Cobble, supra at 391. That is exactly what has occurred here.³

ii. Substantial evidence ignored by the commission. I begin with a discussion of the critical facts ignored, minimized, or misunderstood by the commission. These include the significance of the magnitude of the positive reading, the absolutely negative test of the wash, and the details of the

³ The court suggests that I am engaging in a de novo review. Ante at note 15. To the contrary, I am following the substantial evidence test as defined by this court's past decisions. The court, by contrast, does not examine the entire record, nor does it recognize the utter improbability of environmental contamination explaining the test results in the instant case. Finally, the court suggests that I do not properly defer to the agency's expertise and technical competence regarding the scientific evidence in this case. Id. at . However, the commission does not have any expertise in the science of hair testing or for that matter science in general. Its expertise relates to the application of the merit principles discussed supra -- the identification of political patronage, favoritism, bias, and arbitrary decision-making. The commission is well outside its area of expertise here.

results of the follow-up test performed on a sample collected twenty-five days after the original sample. The 12.2 ng spectrometry result of Gannon's hair sample was more than double the amount required for a positive result and a presumption of ingestion. Most importantly, there is no scientific evidence or plausible explanation that external contamination could cause such a high result without Gannon's knowledge. See New Boston Garden Corp., 383 Mass. at 472-473 (agency finding must have basis in record). This is particularly true in combination with the absolutely negative test of the wash, indicating that there was no environmental contamination to begin with or that any that was present was successfully washed off.

The commission questions the reliability of this negative test of the wash based on the possibility of false positives; this confuses scientific apples with scientific oranges for the reasons explained infra. Finally, the follow-up test performed on a hair sample collected twenty-five days later was negative, as the commission reported, but barely below the amount for a positive test, which the commission ignored. The issue is whether such information, all of which is uncontested or supported by substantial evidence, provided a "sufficient quantum of evidence to substantiate [the department's] legitimate concerns" about the risk of Gannon's illegal drug use and truthfulness. Beverly, 78 Mass. App. Ct. at 188. If this

is the case, the commission's decision was in error, as deference is due to the department's decision-making regarding whether to tolerate an "undue risk[]" of drug use by police officer candidates. Id. at 190.

A. Gannon's elevated test result provides substantial evidence of ingestion. In the instant case, after radioimmunoassay (RIA) testing determined one portion of Gannon's hair sample was presumptively positive for cocaine, another portion of the sample was washed in a phosphate buffer,⁴ the wash was tested by RIA, and a final spectrometry test on the washed, liquefied sampled returned a result of 12.2 ng of cocaine per ten milligrams (mg) of hair. The "cutoff" level, presumptive of ingestion, was five ng per ten mg of hair. Ante at .⁵ The 0.8 ng of the benzoylecgonine (BE) metabolite

⁴ The court fails to account fully for the proven differences between phosphate and other washes. This is a significant fact because studies have found the phosphate-washing procedure to be far more effective than other procedures, including methanol washes. See generally Ropero-Miller & Stout, Analysis of Cocaine Analytes in Human Hair II: Evaluation of Different Hair Color and Ethnicity Types, Report to United States Department of Justice, Document No. 234628 (Mar. 31, 2011) (2011 study).

⁵ According to Psychomedics's senior scientific advisor, Dr. Thomas Cairns, the cutoff is set "conservative[ly]" to distinguish a drug user from someone who has been environmentally exposed to cocaine. Although Gannon's expert testified that "each laboratory could set its own individual criteria for cutoff levels," the commission found in Matter of Boston Police Dep't Drug Testing Appeals, 26 Mass. Civ. Serv.

detected in the sample also satisfies the BE "criterion" required for a sample to be reported positive.⁶ According to the department's expert, Dr. Thomas Cairns, a biochemist and toxicologist who was a senior scientific advisor at Psychemedics and had published widely on hair drug testing, a test result of this amount of cocaine would suggest that Gannon likely had "ingested cocaine on multiple occasions during the [seventy-

Rep. 73, 106, 108 (2013) (DTA), that there is a "general agreement" in the drug testing industry that the Psychemedics cutoff level is the "absolute minimum level for presumption [of] ingestion."

⁶ A metabolite is a derivative substance produced when cocaine is metabolized in the body. DTA, 26 Mass. Civ. Serv. Rep. at 81. The court mentions that testing determined that Gannon's hair sample contained the benzoylecgonine (BE) metabolite, ante at note 5, but does not state that Psychemedics required a certain amount of BE to be present for a result to be reported as positive, ante at . This is significant because laboratories' criteria for reporting a result as positive for ingestion may involve different cocaine metabolites, such as BE, cocaethylene, and norcocaine. See, e.g., 2011 study, supra at 69-70. The court's conclusion that there are "credible concerns in the scientific community regarding the hair drug test" performed in this case, ante at , is significantly weakened by its reliance on portions of studies (or expert testimony based on those studies) that relate to reporting criteria involving these other metabolites and not the BE criteria used in the instant case. See notes 10 and 11, infra (2006 scientific study in record found Psychemedics's washing procedures and protocols had one hundred percent success rate with respect to BE criteria and 2011 study found at least eighty-one percent success ratio with respect to BE criteria, with lack of clarity in positive results for remaining nineteen percent related to whether phosphate or methanol washes were used); note 13, infra (Gannon's expert relied on portions of these studies involving other metabolite criteria).

five] days prior to the date of collection" of his hair sample, indeed, "probably a line of cocaine every weekend." The testimony about the amount of cocaine, as opposed to its source, was not contradicted.

Test results that are "positive at levels well above the cutoff level" are probative of ingestion as opposed to external contamination, as the commission recognized in its earlier case. See Thompson v. Civil Serv. Comm'n, 90 Mass. App. Ct. 462, 469-470 (2016) (upholding termination decision of commission with respect to four officers based in part on evidence that their Psychomedics hair drug test results for cocaine were "positive at levels well above the cutoff level"). See also Matter of Goldin v. Kelly, 77 A.D.3d 475, 476 (N.Y. 2010) (substantial evidence supported termination of police officer who lacked persuasive explanation for why positive hair drug test results were four times "level [of cocaine] that might indicate inadvertent use").⁷ In sum, the amount of cocaine detected is

⁷ The initial test results of the four terminated officers in Thompson v. Civil Serv. Comm'n, 90 Mass. App. Ct. 462 (2016) were all more than double the cutoff of five nanograms (ng) of cocaine (10.1 ng, 10.7 ng, 11.6 ng, 13.7 ng); by contrast, five of the six officers whose appeals were granted had initial test results of less than double the cutoff. See DTA, 26 Mass. Civ. Serv. Rep. at 96-101. For example, one validly terminated officer had two tests at elevated levels (around thirteen ng cocaine per ten mg of hair) and provided no "evidence of specific exposure that would explain these elevated levels." Id. at 109. Because Thompson involved tenured officers, the

highly significant as to whether the cocaine is the product of ingestion or unknown environmental contamination. The commission did not engage (nor does the court engage) with the inherent improbability that such an elevated level of cocaine would somehow get into the hair of a member of the general population through environmental contamination without their knowing it. See New Boston Garden Corp., 383 Mass. at 466. Finally, the court ignores the requirement of the substantial evidence test that the commission's decision may be reversed when there is an "overwhelming probability of the contrary" (citation omitted). Id. See Cobble, 430 Mass. at 393 n.8 (in conducting substantial evidence test, reviewing court may disregard "overly speculative" testimony).

B. There is no evidence suggesting such a high test result could be the product of environmental contamination, or that the particular tests employed here could not reasonably and reliably distinguish between ingestion and environmental contamination in these circumstances. A major basis for the commission's and the court's conclusion that the department lacked reasonable justification for Gannon's bypass was the concern that the testing cannot reliably determine whether this elevated result

officers were entitled to take a "safety net" follow-up test, which, for three of the four officers, remained positive; here, as discussed infra, Gannon's independent follow-up test was just barely negative, which is hardly exculpatory.

was caused by ingested cocaine or external contamination, i.e., that Psychemedics testing "can result in false positives." Indeed, the court concludes that there are "concerns raised in the scientific community regarding the reliability of the test and the effectiveness of the washing procedure to remove external contaminants" and thus suggests that the possibilities of ingestion versus external contamination were "two fairly conflicting views" regarding which a reviewing court must defer to the agency. Ante at . For the reasons discussed infra, I believe the court's assertion does not fully or accurately characterize the scientific evidence before the commission.

The concern with whether hair drug testing removes external contamination has been found to be most relevant with respect to individuals who may be exposed to cocaine in their job. See note 8, infra. Of course, at the time he submitted his hair sample, Gannon was a police officer candidate, not a police officer potentially exposed to cocaine through his work environment.

Furthermore, neither of the studies on which the commission relied suggests that Gannon's 12.2 ng test result could have resulted from contamination of cocaine in the general environment. (The two studies are Stout, Roper-Miller, Baylor, & Mitchell, External Contamination of Hair with Cocaine: Evaluation of External Cocaine Contamination and Development of

Performance-Testing Materials, 30 J. Analytical Toxicology 490 [2006] [2006 study], and Roper-Miller & Stout, Analysis of Cocaine Analytes in Human Hair II: Evaluation of Different Hair Color and Ethnicity Types, Report to United States Department of Justice, Document No. 234628 [Mar. 31, 2011] [2011 study].) To the contrary, the 2011 study concluded that, for members of the general population, "it is unlikely that widespread contamination of hair is an issue."⁸ 2011 study, supra at 76. This conclusion is not contradicted by the testimony of Gannon's expert that external contamination from cocaine could occur from handling paper money, buying a quart of milk, or getting a

⁸ The 2011 study concluded that environmental contamination is unlikely to be an issue beyond "individuals who may have exposure to high drug concentrations because of their jobs" or individuals who frequent "locations where use or handling of [cocaine] has occurred." 2011 study, supra at 20, 76. The study therefore recommended to the Department of Justice that future Federal hair testing guidelines use an extended decontamination wash procedure and a mathematical wash criterion (i.e., the procedures used in the instant case) because the "federal workplace drug-testing program includes individuals who may have exposure to high drug concentrations because of their jobs" (emphasis added). Id. at 76. Although the court selectively quotes from Stout, Roper-Miller, Baylor, & Mitchell, External Contamination of Hair with Cocaine: Evaluation of External Cocaine Contamination and Development of Performance-Testing Materials, 30 J. Analytical Toxicology 490 (2006) (2006 study) to support the general proposition that externally applied cocaine can be absorbed into hair, ante at , this study nowhere addressed the issue of which environments are most likely to have external cocaine and in what quantities, and consequently in no way contradicts the conclusion of the 2011 study by the same authors that such contamination would not likely occur in significant amounts outside of occupational or illicit contexts.

haircut. The expert did not offer any evidence about the quantities of cocaine present in these environments. In fact, the 2011 study observed that a study regarding the "potential surface contamination of currency" with cocaine did "not provide sufficient evidence about . . . potential surface exposure amounts." Id. at 18. Indeed, as the commission found in Matter of Boston Police Dep't Drug Testing Appeals, 26 Mass. Civ. Serv. Rep. 73, 90 (2013), studies "tend[] to suggest that external contamination of hair by the transfer of cocaine found in the general environment occurs relatively infrequently."

Furthermore, even assuming that Gannon had been exposed to an elevated amount of cocaine without his knowing it, neither of the two studies suggests that such a high amount of cocaine was likely to be present following Psychomedics's washing protocols. As mentioned, these studies did not attempt to study general environmental contamination; rather, they examined the efficacy of certain washing procedures and protocols with respect to hair samples that had been directly contaminated by extremely large amounts of cocaine relative to the amounts used in the Psychomedics testing.⁹ Most significantly, they found that the

⁹ Specifically, the 2006 study applied fifteen milligrams (mg) of cocaine solution to the hair samples while the 2011 study applied around eight mg of powdered cocaine to the samples. (A milligram is equivalent to 1 million nanograms.) Although the court does not attach significance to these large

Psychomedics procedures were highly effective with respect to the BE criteria used in the instant case. Specifically, the 2006 study found that the Psychomedics decontamination procedures and an application of the "wash criterion" was one hundred percent successful with respect to the BE criteria used in the instant case.¹⁰ The 2011 study found these procedures and

quantities, ante at note 26, the 2011 study expressly noted criticisms that the "quantity of [cocaine] used in [the study] is unrealistic because it is not clearly understood how much [cocaine] may be on a surface that is touched by law enforcement or others. Some research with methamphetamine cook houses suggests that high surface contamination may be possible. Although this quantity of [cocaine] we used may be too large for some scenarios, it may be too small to be representative of other scenarios." 2011 study, supra at 75.

¹⁰ The court cites the 2006 study to support its claim that it is "unclear" whether Psychomedics's washing procedures could "effectively" remove externally present cocaine from a hair sample. Ante at . This study examined whether hair samples that had been directly contaminated with cocaine would be reported as positive by various cutoff criteria, including the BE criteria at issue in the instant case. In total, 585 samples were analyzed. There were 195 samples that were not decontaminated at all. The other 390 samples were decontaminated by one of four different washing procedures. Of these 390 samples, 148, or thirty-eight percent, remained positive by the BE criteria following decontamination. The court mentions the thirty-eight percent figure, ante at note 13, but in fact only sixty-seven of these 148 positive samples had been subjected to the Psychomedics washing procedure. The study does not state the over-all success rate of the Psychomedics washing procedures.

Furthermore, this figure does not include the wash criterion used in the instant case (i.e., multiplication of any cocaine in the final wash by five and subtraction from the spectrometry result of the washed sample). "To investigate the utility of a 'Wash Criterion,' [the study's authors] selected

the wash criterion had at least an eighty-one percent success rate, even when the hair was directly doused with large amounts of cocaine.¹¹ This study recommended to the Department of Justice that the Psychomedics protocol, due to its high degree

[sixty-five] samples (across the study period) from those decontaminated by the [Psychomedics washing] procedure." 2006 study, supra at 499. Before application of the wash criterion, ten of the selected samples were positive according to the BE criteria. Following application of the wash criterion, none of the samples was positive. Thus, the limited data produced by the study found the Psychomedics washing procedures and protocols to have a one hundred percent success rate with respect to the BE criteria used in the instant case -- a fact entirely overlooked by the commission.

Finally, the court's reference, ante at note 13, to the results of a 2001 study mentioned in the 2006 study does not provide evidence for the court's assertion. That study is not in the record, but according to the 2006 study, there were "differences in the wash procedures" between the Psychomedics procedures and those used by the 2001 study.

¹¹ The 2011 study found that, with respect to samples washed several hours after contamination and evaluated using the BE criteria, the Psychomedics phosphate-washing procedures and wash criterion eliminated one hundred percent of false positive calls. This study further found that, with respect to samples decontaminated at the end of the eight-week study period, the washing procedures eliminated at least eighty-one percent of false positive calls with respect to the BE criteria. I say "at least" because it is unclear from the study how many methanol-washed samples, as opposed to phosphate-washed samples, were included in the eighty-one percent figure, so the actual success rate with the phosphate wash may have been higher. Regardless, this is still a high level of reliability.

of efficacy, should be incorporated into Federal hair testing guidelines to protect against environmental contamination.¹²

The record further reveals that Gannon's expert had performed no hair testing of his own and his opinion about the unreliability of Gannon's test result was largely based on these studies, in particular the 2006 study.¹³ Therefore, contrary to

¹² The commission quoted with approval a passage from DTA, 26 Mass. Civ. Serv. Rep. at 106-107, that pointed to "criticism from sources such as the [Federal Bureau of Investigation (FBI)] Laboratory" as one reason why hair drug testing was an unreliable methodology. Yet the commission ignored evidence in the record that the FBI had resumed hair drug testing after sending analysts to the Psychomedics laboratory to study its procedures. Although not necessary to my analysis, as I conclude there is substantial other evidence to support the reliability of the test and the reasonableness of the bypass decision, I note that (1) the FBI has stated that it never suspended hair testing with respect to "hair samples collected from subjects that have no legitimate reason to have cocaine exposure, such as in child endangerment investigations," LeBeau & Montgomery, The authors' reply, 34 J. Analytical Toxicology 355, 355-356 (2010); and (2) on the basis of a 2014 study applying the "wash criterion" developed by Cairns, the FBI changed its position and concluded that it would conduct hair drug testing even in cases where there was a potential for the donor to have been externally contaminated, see Montgomery, LeBeau, & Morris-Kukoski, Letter to the Editor: New Hair Testing Conclusions, 41 J. Analytical Toxicology 161, 161 (2016); Morris-Kukoski, Montgomery, & Hammer, Analysis of Extensively Washed Hair from Cocaine Users and Drug Chemists to Establish New Reporting Criteria, 38 J. Analytical Toxicology 628 (2014).

¹³ Gannon's expert, Dr. David Benjamin, testified that, although he had not personally performed hair testing, he had "extensive" experience with the same "testing procedures" (i.e., RIA and mass spectrometry) used in urine testing for drugs. On cross-examination, he testified that his opinion about the unreliability of all hair drug testing was based on "testing"

the court's assertion, ante at , Gannon's expert's testimony hardly provides an adequate basis for the possibility that the test result was unreliable due to the general inability of hair drug testing to remove all external contaminants. See Cobble, 430 Mass. at 393 n.8 ("under the substantial evidence test, we may disregard supporting testimony that cannot reasonably form

(apparently referring to his familiarity with these testing procedures) and the 2006 study:

Q.: "And I believe you testified that there's no scientifically-accepted method of decontamination of hair samples; is that correct?"

A.: "Yes."

Q.: "And what is that based on?"

A.: "That's based on testing and also the article that you showed me from Peter Stout in RTI [(i.e., the 2006 study)]. He says the same thing."

Benjamin also filed an affidavit discussing the 2006 and 2011 studies in which he "conclude[d] with reasonable scientific certainty that hair testing is unreliable because decontaminating the external portion of the hair follicle to insure removal of environmentally adsorbed cocaine cannot be demonstrated at a level that would insure reliable testing and reporting of the presence of cocaine within the hair follicle, as a result of distribution through the blood, secondary to actual ingestion of cocaine." However, in this affidavit, Benjamin acknowledged that the 2006 study had found that the Psychemedics procedures (following application of the wash criterion) successfully had decontaminated all the samples pursuant to the BE criteria.

The expert also opined that the test was unreliable because RIA had been used to test the wash and hence the result could have been a "false negative"; however, there was no record evidence supporting the possibility that RIA in fact was likely to produce a false negative. See infra.

the basis of impartial, reasoned judgment," for example, because it is "too indefinite" and "overly speculative"). This conclusion was instead based on overwhelmingly improbable inferences. See New Boston Garden Corp., 383 Mass. at 466.

C. Negative RIA test of washing fluid. The test of the washing fluid in which Gannon's hair sample was decontaminated provides further confirmation that his final test result reflects drug ingestion rather than environmental contamination. The purpose of the multiple washes is to remove environmental contamination. As both experts testified, a negative test on the wash confirms the efficacy of the washing procedures; presumably, it also indicates that the sample was never contaminated in the first place, i.e., that there was nothing to wash off. Here, an RIA test performed on the wash registered an "absolute zero" for cocaine, and a spectrometry test on the washed hair sample detected 12.2 ng of cocaine. These two test results are thus highly significant: as Cairns testified without contradiction, to account for contamination from "external sources" Psychomedics employs a five-stage "wash procedure that we call aggressive" that is validated by an absence of cocaine in the final wash. See note 16, infra.¹⁴

¹⁴ As mentioned, see note 13, supra, Benjamin's criticisms of the reliability of hair drug testing were largely based on the 2006 study. But when asked if he was "aware of how many

Not only did Cairns testify that an absence of cocaine in the final wash validates the efficacy of the washing procedures, but Gannon's expert, Dr. David Benjamin, himself appeared to offer testimony supporting the conclusion that a washing reliably determined to be negative, combined with a positive mass spectrometry test result on the washed hair sample, was evidence of drug ingestion and not a product of external contamination: he testified that he would "accept the results" of a test in which the washing fluid tested negative for cocaine because such a result suggests a "greater likelihood" of ingestion.¹⁵ In sum, the negative result of the wash corroborated the reliability of Psychemedics's test results: it was credible evidence that the procedures had removed all the external contaminants (or that there were no contaminants to begin with), and hence of cocaine ingestion.¹⁶ Again, the

total washes Psychemedics conducts," he responded, "Gee, I really don't know the total of it, no."

¹⁵ Benjamin testified: "[I]deally, in order to be able to accept the results of the testing of the hair, I have to have a negative test for the washings. If the washings are positive, it could mean that there was external contamination If the washing is negative and you know that you've removed the cocaine from the outside of the hair, then there's a greater likelihood that if you got a positive test on the hair follicle that it came from inside the hair, because you've cleaned the outside of the hair."

¹⁶ The court provides no record evidence that there was substantial evidence for Benjamin's theory about the "false negative" that Gannon argued below and that the commission

commission did not engage (nor does the court engage) with the inherent improbability that the wash of a sample initially containing this large amount of cocaine -- supposedly from environmental contamination -- would be reported absolutely negative by Psychemedics's washing protocols and procedures.

See New Boston Garden Corp., 383 Mass. at 466.

Instead, the commission, and apparently the court, discounts the reliability of the wash results based on

relied on when dismissing the significance of the negative wash. The court's main response to the absence of cocaine in the final wash is to cite to the 2006 study for the general proposition that no decontamination procedure is entirely successful at removing external contaminants. Ante at . As discussed in note 10, supra, the court does not seem to recognize that this study found Psychemedics's washing procedures and protocols to be entirely successful with respect to the BE criteria used in the instant case, as conceded by Gannon's expert.

The court also claims that Cairns's own testimony supports the proposition that he believed Psychemedics's procedures to be ineffective at removing all external contaminants that may penetrate the hair. Ante at . This is not an accurate representation of the record. Cairns's testimony was that the Psychemedics wash procedure is "aggressive" specifically to address this possibility:

"External sources such as the donor's own sweat from their sweat pores on their head would not only just coat the outside of the hair but could penetrate a little bit. That's the reason we employ a wash procedure that we call aggressive. It's five washes and a long time By the third wash, [external contamination is] usually gone [B]y the fifth wash, I doubt you'd find any [external contamination] left in the wash."

Benjamin's testimony about the possibility of false positives.¹⁷ Benjamin explained that RIA targets a particular substance with antibodies designed to bind with the molecular structure of that substance; and this creates the potential for "cross reactivity" whereby the antibody detects a substance (such as a dental anesthetic) with a similar chemical structure. Ante at . He concluded that Psychemedics's testing of the wash by RIA and not

¹⁷ The portion of Benjamin's testimony relied on by the commission was based on the tendency of RIA to produce false positives:

Q.: "Is RIA testing of the wash a reliable way to test the wash?"

A.: "It is not."

Q.: "Is mass spectrography [sic] reliable?"

A.: "The combination of gas chromatography and mass spectrometry is what should have been used to definitively illustrate that that washing was negative."

Q.: "And is that based on partially, in fact, that there's such a high false positive when an RIA testing is done?"

A.: "It is indeed." (Emphases added.)

Benjamin frequently remarked on the tendency of RIA to produce false positives; only once did he state that RIA could produce a false negative, and when asked to provide a basis for this opinion, he cited evidence about RIA producing false positives. His "inconsistent testimony" that a method prone to false positives somehow produced a false negative cannot "reasonably form the basis of impartial, reasoned judgment," and may permissibly be disregarded. See Mendonca v. Civil Serv. Comm'n, 86 Mass. App. Ct. 757, 765 (2014), quoting Cobble, 430 Mass. at 393 n.8.

mass spectrometry therefore created an "issue of reliability" given that "RIA has a high degree of false positives associated with it."¹⁸

The fundamental problem with this analysis is its confusion of false positives with false negatives. Proof that RIA may over-identify substances as cocaine provides no support for the proposition that RIA testing will produce false negatives.¹⁹ These are different scientific problems, requiring different scientific proofs. Although it would have provided further confirmation to use the more accurate spectrometry test to determine whether the wash was negative, the issue with RIA testing, as the commission itself recognized, is not false negatives but "false positives." Consequently, I cannot find an "impartial, reasoned" basis in the record for the commission's

¹⁸ When asked "what portion of [the laboratory data package] do you rely to suggest that the test is unreliable," Benjamin identified "[p]age 3 that is titled 'Summary of Procedures and Results.'" That page stated that Gannon's hair sample was first determined by RIA to be a "presumptive positive for [c]ocaine." The sample was then "washed to decontaminate the sample, and the wash analyzed by RIA to demonstrate that decontamination procedures were effective." Finally, the sample was subjected to mass spectrometry to determine the amount of cocaine it contained. Crucially, this page did not state that the testing of the wash resulted in a negative result for cocaine.

¹⁹ Asked why Psychomedics did not test the wash with mass spectrometry, Cairns stated that RIA is "very sensitive" at detecting cocaine, specifically that it "is accurate and sensitive to .1 nanograms, and .1 nanograms is the lowest level the RIA can detect."

conclusion, based on this testimony, that the spectrometry method, rather than RIA, must be used to definitively illustrate that the washing was negative. Cobble, 430 Mass. at 393 n.8. See New Boston Garden Corp., 383 Mass. at 472-473.

D. "Negative" follow-up test. Finally, the commission nowhere acknowledged that Gannon's April 2010 follow-up test, based on a hair sample collected twenty-five days after the original one, contained cocaine at a level just barely below the five ng cutoff level and thus is consistent with the earlier, positive result. The commission simply describes this test as "negative." This is technically correct, as it was very slightly below the cutoff, yet there was uncontradicted testimony from Cairns that the lower amount of cocaine was consistent with abstention from drug use between the time of the first and second test and thus that "in [his] opinion," this test "reinforces the evidence of the first sample."²⁰ The

²⁰ Gannon independently submitted a new hair sample to Psychomedics for testing; this sample was two centimeters long and hence provided a "look-back" period of forty-five days (i.e., a shorter "look-back" period than the earlier, 3.2 centimeter hair sample). The "hair analysis drug test results" produced in connection with the follow-up test state that the test was "negative" for cocaine, with a "'[n]egative' result" defined as one where the "drug was not detected in an amount that meets or exceeds the cutoff." On the basis of the "quality control form" associated with the follow-up tests, however, Cairns testified that the test "barely missed being called a presumptive positive" and "reinforces the evidence of the first sample."

commission erroneously stated that it may disregard expert opinions; an agency must provide a basis in the record, however, if it rejects uncontradicted expert testimony on a subject beyond common knowledge and experience. See Kavaleski, 463 Mass. at 694, citing Robinson v. Contributory Retirement Appeal Bd., 20 Mass. App. Ct. 634, 639-640 (1985); Robinson, supra at 640 (in absence of findings, reviewing court cannot determine whether agency applied correct principles of law to burden of proof standard). That being said, I do not place significant weight on this error, as I recognize that RIA testing presents the risk of false positives, and the amount of cocaine detected here is consistent with that possibility. However, the commission and the court do not come to terms with the uncontradicted testimony establishing that the follow-up test results are also consistent with prior drug use. Ante at note 28. For that reason, they are not -- as Gannon argued and the commission and court seem to suggest -- exculpatory.²¹

²¹ Contrary to the court's assertion, ante at , I do not neglect the fact that the commission found Gannon's denial credible. Such a finding is not enough to warrant deference to the commission when the cumulative weight of credible evidence in the entire record clearly supports the conclusion that the department's bypass decision was based on a reasonable risk calculation about the likelihood of Gannon's cocaine ingestion, and thus that the decision did not violate basic merit principles. See Beverly, 78 Mass. App. Ct. at 188-189 (existence of "factual contest over whether [police officer

2. Conclusion. Our deference to the commission does not require "abdication." NSTAR Elec. Co. v. Department of Pub. Utils., 462 Mass. 381, 386 (2012), and cases cited. Accord Craft Beer Guild, LLC v. Alcoholic Beverages Control Comm'n, 481 Mass. 506, 512 (2019) ("deference does not suggest abdication"). In particular, it is appropriate for a reviewing court to overturn a judgment of the commission when it has "improperly substituted its judgment for that of the appointing authority." Falmouth, 61 Mass. App. Ct. at 803. See Police Dep't of Boston v. Collins, 48 Mass. App. Ct. 408, 413 (2000) ("commission's decision impermissibly substituted its judgment for that of the appointing authority"); Cambridge, 43 Mass. App. Ct. at 305 ("impermissible substitution by the commission of its judgment for that of the appointing authority about the importance, to her fitness to be a police officer, of [candidate's] criminal

candidate had] ever engaged in the misconduct" did not deprive appointing authority of reasonable justification for bypass).

As an additional "factor" in its analysis, the commission noted that there were two medical review reports in the record, the latter of which had left the amount of cocaine required for the confirmation cutoff blank. However, there is no dispute that Gannon's test had been subjected to confirmatory testing. Unlike the court, ante at note 21, I do not see how the medical review reports generated by Concentra Health Services, Inc., reasonably could have any bearing on the reliability of the Psychemedics tests at issue here. Nor do I see how negative tests that Gannon took in the past (the results of which Gannon obviously does not challenge) are relevant to assessing the accuracy of the test conducted in 2010.

record balanced against her work record"). See also Falmouth v. Civil Serv. Comm'n, 447 Mass. 814, 827 (2006) ("commission's decision improperly substituted its judgment for that of the appointing authority in reducing [police officer's] suspension to sixty days from 180 days"). As discussed, the department has a legitimate, indeed a compelling, concern about drug use and lying by its police officer candidates and need not accept a high risk of such drug use. The test it employed to detect such a high risk was also reasonably reliable, and consistent with merit principles. There was also no evidence of improper considerations in the instant case. Finally, any finding to the effect that the 12.2 ng positive test of the hair, in combination with the absolute zero negative test of the wash, was the product of environmental contamination and not ingestion was most improbable. New Boston Garden Corp., 383 Mass. at 466. Accordingly, I would hold that the decision of the Superior Court should be affirmed, and hence respectfully dissent from the court's opinion.